Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ■
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Replace Burst Plates with Secondary Relief Valves

Applicable sector(s):

■ Production ■ Processing ■ Transmission and Distribution

Partners reporting this PRO: Texaco

Other related PROs: Test and Repair Pressure Safety Valves, Install Flares

Technology/Practice Overview

Description

Rupture Discs, or "Burst Plates," are a low capital cost alternative to pressure relief valves, for the protection of process equipment when gas pressures rise to levels exceeding the maximum allowable operating pressure. These burst plates are for one-time use only. If the calibrated metal membrane (burst plate) is broken by excessive gas pressure, significant amounts of methane, along with VOCs, and HAPs, vent to the atmosphere until the device is manually blocked-in and the broken plate replaced with a new plate.

One partner has reported installing secondary relief valves (PRVs) on burst plates to reduced methane emissions. The pressure relief valve will open when the burst plate breaks, and then automatically close when the gas pressure returns to safe levels. Installing PRVs on top of burst plates has the dual benefits of reducing fugitive leaks while the burst plate is intact, and minimum gas release during pressure surges.

Methane Savings

500 Mcf/yr

Costs

Capital Costs (including installation)
☐ <$1,000 ■ $1,000-$10,000 ☐ >$10,000

Operating and Maintenance Costs (Annual)
■ <$100 ☐ $100-$1,000 ☐ >$1,000

Payback (Years)

■ 0-1 ☐ 1-3 ☐ 3-10 ☐ >10

Principal Benefits

Reducing methane emissions was:

■ **A primary justification for the project** ☐ **An associated benefit of the project**

Operating Requirements

The PRVs have to pass the ASME Code 26 and Department of Transportation's pressure relief valve requirements.

Applicability

PRVs added in conjunction with burst plates are most advantageous at unmanned sites that may be prone to pressure surges.

Methane Emission Reductions

The methane emission reductions can be estimated using vendor's data, which is readily available for any size burst plate and pressure rating: e.g. 8,000 scfm for a 2-inch burst plate operating at 150 psig.

Economic Analysis

Basis for Costs and Savings

Methane emission reductions of 500 Mcf/yr apply to a single incident of rupturing a 2-inch burst plate on a 150 psig system and venting gas continuously for one hour until manually blocked in and replaced.

Discussion

The primary benefit of this PRO is to save natural gas. The capital costs are based on installing a pressure relief valve on top of a rupture disk. The maintenance costs are for inspecting the valve once a year for leakage. The payback is based on the vented gas savings.